

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): An apparatus for drying under reduced pressure that dries a solvent in a coating liquid by placing a substrate having the coating liquid applied in a pressure-reduced atmosphere, comprising:

an airtight container in which a substrate mount portion for mounting the substrate is provided to place the substrate in the pressure-reduced atmosphere;

a straightening vane provided so as to face a surface of the substrate mounted on said substrate mount portion with a gap interposed, and having a size the same as or larger than an effective area of the substrate;

means for evacuating and reducing pressure in said airtight container;

an exhaust flow rate regulating portion for regulating a flow rate of an exhaust for pressure reduction; and

a control portion outputting a flow rate set value for said exhaust flow rate regulating portion, and varying the flow rate set value at least in two steps while the solvent is actively evaporating from said coating liquid.

Claim 2 (Currently Amended): The apparatus for drying under reduced pressure according to claim 1, wherein

said control portion varies the flow rate set value from one to another among a first flow rate set value and a second flow rate set value larger than the first flow rate set value, while the solvent is actively evaporating from said coating liquid, wherein a second exhaust flow rate is larger than a first exhaust flow rate.

Claim 3 (Currently Amended): The apparatus for drying under reduced pressure according to claim 2, wherein

a timing for switching between the first flow rate set value and the second flow rate set value includes setting in advance a timing at which high in-plane uniformity in terms of film thickness is attained, based on experiments performed in advance for each type of a solvent contained in a resist liquid, and a concentration of a resist component, and each film thickness of a coating liquid, and carrying out switching at this timing ~~is a timing attaining evenness in a peripheral portion of the coating film better than in a case where evacuation has been continued based on the first flow rate set value or in a case where evacuation has been continued based on the second flow rate set value while the solvent is actively evaporating from said coating liquid.~~

Claim 4 (Original): The apparatus for drying under reduced pressure according to claim 2, wherein

said control portion includes a timer forming a timing of switching between the first flow rate set value and the second flow rate set value.

Claim 5 (Original): The apparatus for drying under reduced pressure according to claim 2, further comprising a pressure detecting portion for detecting a pressure in the airtight container, wherein

said control portion switches the flow rate set value between the first flow rate set value and the second flow rate set value based on a pressure value detected by the pressure detecting portion.

Claim 6 (Currently Amended): An The apparatus for drying under reduced pressure that dries a solvent in a coating liquid by placing a substrate having the coating liquid applied in a pressure-reduced atmosphere, comprising:

an airtight container in which a substrate mount portion for mounting the substrate is provided to place the substrate in the pressure-reduced atmosphere;

a straightening vane provided so as to face a surface of the substrate mounted on said substrate mount portion with a gap interposed, and having a size the same as or larger than an effective area of the substrate;

means for evacuating and reducing pressure in said airtight container;

an exhaust flow rate regulating portion for regulating a flow rate of an exhaust for pressure reduction; and

a control portion outputting a flow rate set value for said exhaust flow rate regulating portion, and varying the flow rate set value at least in two steps while the solvent is actively evaporating from said coating liquid according to claim 1, wherein

said control portion stores data corresponding to a pattern of the flow rate set value while the solvent is actively evaporating from said coating liquid, for each type of the coating liquid.

Claim 7 (Currently Amended): An The apparatus for drying under reduced pressure that dries a solvent in a coating liquid by placing a substrate having the coating liquid applied in a pressure-reduced atmosphere, comprising:

an airtight container in which a substrate mount portion for mounting the substrate is provided to place the substrate in the pressure-reduced atmosphere;

a straightening vane provided so as to face a surface of the substrate mounted on said substrate mount portion with a gap interposed, and having a size the same as or larger than an effective area of the substrate;

means for evacuating and reducing pressure in said airtight container;

an exhaust flow rate regulating portion for regulating a flow rate of an exhaust for pressure reduction; and

a control portion outputting a flow rate set value for said exhaust flow rate regulating portion, and varying the flow rate set value at least in two steps while the solvent is actively evaporating from said coating liquid according to claim 1, wherein

said control portion stores data corresponding to a pattern of the flow rate set value while the solvent is actively evaporating from said coating liquid, for each film thickness of the coating liquid.

Claim 8 (Currently Amended): An The apparatus for drying under reduced pressure that dries a solvent in a coating liquid by placing a substrate having the coating liquid applied in a pressure-reduced atmosphere, comprising:

an airtight container in which a substrate mount portion for mounting the substrate is provided to place the substrate in the pressure-reduced atmosphere;

a straightening vane provided so as to face a surface of the substrate mounted on said substrate mount portion with a gap interposed, and having a size the same as or larger than an effective area of the substrate;

means for evacuating and reducing pressure in said airtight container;

an exhaust flow rate regulating portion for regulating a flow rate of an exhaust for pressure reduction; and

a control portion outputting a flow rate set value for said exhaust flow rate regulating portion, and varying the flow rate set value at least in two steps while the solvent is actively evaporating from said coating liquid according to claim 1, wherein

said control portion stores data corresponding to a pattern of the flow rate set value while the solvent is actively evaporating from said coating liquid, for each combination of the type and the film thickness of the coating liquid.

Claim 9 (Original): A coating film forming apparatus, comprising:

a cassette mount portion in which a cassette storing a plurality of substrates is loaded;

a coating unit applying a coating liquid to the substrate;

the apparatus for drying under reduced pressure according to claim 1, into which the substrate having the coating liquid applied in the coating unit is loaded; and

means for taking out the substrate from the cassette mounted on said cassette mount portion, carrying the substrate into said coating unit, and carrying the substrate having the coating liquid applied to the apparatus for drying under reduced pressure.

Claim 10 (Currently Amended): The apparatus for drying under reduced pressure according to claim 1, further comprising

a control portion controlling a flow rate set value for said exhaust flow rate regulating portion such that while the solvent is actively evaporating from said coating liquid, the pressure in said airtight container is set so as to be slightly higher than a pressure at which the solvent at room temperature attains to a boiling point in said airtight container in which pressure has been reduced wherein

~~while the solvent is actively evaporating from said coating liquid, the pressure in said~~

~~airtight container is set so as to be slightly higher than a pressure at which the solvent at room temperature attains to a boiling point in said airtight container in which pressure has been reduced.~~

Claim 11 -14 (Cancelled).

Claim 15 (New): The apparatus for drying under reduced pressure according to claim 6, wherein

said control portion varies the flow rate set value from one to another among a first flow rate set value and a second flow rate set value larger than the first flow rate set value, while the solvent is actively evaporating from said coating liquid, wherein a second exhaust flow rate is larger than a first exhaust flow rate.

Claim 16 (New): The apparatus for drying under reduced pressure according to claim 15, wherein

a timing for switching between the first flow rate set value and the second flow rate set value includes setting in advance a timing at which high in-plane uniformity in terms of film thickness is attained, based on experiments performed in advance for each type of a solvent contained in a resist liquid, and a concentration of a resist component, and each film thickness of a coating liquid, and carrying out switching at this timing.

Claim 17 (New): The apparatus for drying under reduced pressure according to claim 15, wherein

said control portion includes a timer forming a timing of switching between the first flow rate set value and the second flow rate set value.

Claim 18 (New): The apparatus for drying under reduced pressure according to claim 15, further comprising

a pressure detecting portion for detecting a pressure in the airtight container, wherein said control portion switches the flow rate set value between the first flow rate set value and the second flow rate set value based on a pressure value detected by the pressure detecting portion.

Claim 19 (New): A coating film forming apparatus, comprising:

a cassette mount portion in which a cassette storing a plurality of substrates is loaded;
a coating unit applying a coating liquid to the substrate;

the apparatus for drying under reduced pressure according to claim 6, into which the substrate having the coating liquid applied in the coating unit is loaded; and

means for taking out the substrate from the cassette mounted on said cassette mount portion, carrying the substrate into said coating unit, and carrying the substrate having the coating liquid applied to the apparatus for drying under reduced pressure.

Claim 20 (New): The coating film forming apparatus according to claim 19, wherein the apparatus for drying under reduced pressure further comprises

a control portion controlling a flow rate set value for said exhaust flow rate regulating portion such that while the solvent is actively evaporating from said coating liquid, the pressure in said airtight container is set so as to be slightly higher than a pressure at which the solvent at room temperature attains to a boiling point in said airtight container in which pressure has been reduced.

Claim 21 (New): The apparatus for drying under reduced pressure according to claim 1, wherein

the flow rate set value is varied at least in two steps after a time when the solvent in the coating liquid starts to actively evaporate.

Claim 22 (New): The apparatus for drying under reduced pressure according to claim 1, wherein

a second exhaust flow rate is larger than a first exhaust flow rate during a period while the solvent is actively evaporating from said coating liquid.

Claim 23 (New): The apparatus for drying under reduced pressure according to claim 1, wherein

the flow rate set value is varied at least in three steps after a time when the solvent in the coating liquid starts to actively evaporate.

Claim 24 (New): The apparatus for drying under reduced pressure according to claim 1, wherein

a second exhaust flow rate is smaller than a first exhaust flow rate and a third exhaust flow rate is larger than the second exhaust flow rate, during a period while the solvent is actively evaporating from said coating liquid.

Claim 25 (New): The apparatus for drying under reduced pressure according to claim 1, wherein the solvent actively evaporates from the surface of the substrate and the straightening vane is configured such that a vapor flows outward through a small gap between the surface of the substrate and the straightening vane.